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4 **SYSTEMS AND METHODS FOR REPLACING TELEVISION SIGNALS**

5 CROSS-REFERENCE TO RELATED APPLICATIONS

6 This application is a continuation of PCT International
7 Application No. PCT/US98/17980, which claims priority of U.S.
8 Provisional application No. 60/057,089, the disclosures of which
9 are hereby incorporated by reference.

10 FIELD OF THE INVENTION

11 The present invention relates generally to television
12 systems, and more particularly, to the interception of television
13 programming signals tuned by a television and the replacement or
14 overlay of said tuned television programming signals with
15 alternative video and/or audio programming and/or with graphics
16 and/or text.

17 BACKGROUND OF THE INVENTION

18 Historically, television viewers have controlled the tuning
19 of the television and have consequently controlled the video
20 display and audio sound of the television signal presented on the
21 monitor and over the speakers of the viewer's television set.
22 Early television sets were manually tunable; later, television
23 viewers began to use infra-red remote control devices to change
24 the channel to which the television was tuned.
25

26 In the viewer-controlled-tuning environment, television
27 programming is typically presented to the viewer over a
28 commercial channel which interrupts the television program with
29 paid-for advertisements. Sponsors pay a particular network or
30 a particular channel to insert advertisements at scheduled times
31 during the delivery of a particular television program. For
32 instance, a fast-food hamburger restaurant chain might pay the
33 FOX network a large sum of money to air a commercial
34 advertisement for a ketchup-dripping hamburger for 30 seconds at
35 a specified time during the nationwide broadcast of the

1 SuperBowl. Typically, during a commercial interruption to a
televised program, multiple commercial advertisements are shown,
back-to-back.

5 In the viewer-controlled-tuning environment, if the
television viewer tunes the viewer's television to the channel
that delivers FOX network programs to the viewer's television
set, then the television viewer's television display monitor
displays the SuperBowl game during the time scheduled for the
10 airing of that game. During the time that the FOX network
transmits coverage of the SuperBowl game event, the FOX network
schedules interruptions in the delivery of the program for
commercial advertisements. During the scheduled advertisements,
if the viewer does not change channels, then the viewer's
15 television set displays the scheduled advertisements on the
viewer's television.

Many viewers do not want to watch the particular
advertisements that are shown during the scheduled commercial
interruptions. Such viewers might change channels, a process
often referred to as "channel surfing," during the commercial
20 break. The channel surfing viewer must guess how long the
commercial break will last, so that the viewer can finally change
channels back to the FOX network in time to watch the
continuation of the SuperBowl game.

25 Historically, television sets were "dumb" terminals that,
when tuned to a particular channel, displayed on the display
monitor the visual representation of the analog television
signals tuned by the said television tuner. In contrast with
older "dumb" television sets, many modern television sets are
30 equipped with sophisticated and powerful programmable
microprocessors and provide significant Random Access Memory
("RAM") and Read Only Memory ("ROM"). Increasingly, modern
microprocessor/RAM/ROM equipped television sets are programmed
with an Electronic Program Guide ("EPG").

1 As an alternative to channel surfing during commercial
breaks, some viewers activate the EPG to view the schedule of
upcoming programs on other channels. Recent innovations to
5 Electronic Program Guides ("EPG"s) provide viewer-to-EPG
interaction improvements and provide Picture-In-Guide ("PIG")
display of the television program simultaneous with the display
of the EPG. International Application No. PCT/US95/11173
(International Publication No. WO 96/07270), the disclosure of
10 which is incorporated by reference herein for all purposes,
illustrates such an improvement. Further innovations to EPGs
provide for multiple "windows" in the EPG display that allow the
viewer to simultaneously, among other things: continue watching
the currently tuned channel, navigate the programming schedule
15 for the channels available to the viewer's television, and watch
multiple additional modes of advertising. U.S. Patent
Application No. 09/120488, Attorney Docket No. 32714/LTR/E190,
the disclosure of which is incorporated by reference herein for
all purposes, illustrates such improvements.

20 One of the many improvements disclosed in U.S. Patent
Application No. 09/120488, Attorney Docket No. 32714/LTR/E190 is
the collection of extensive information concerning a particular
viewer, described there as a viewer's profile. Also described
in U.S. Patent Application No. 09/120488, Attorney Docket No.
25 32714/LTR/E190 is the utilization of a viewer's profile to
customize the presentation to the viewer of advertisement. In
that invention, the presentation of advertising is customizable
for every mode in which advertisement is presented to the viewer,
including but not limited to the customization of advertising
30 presented as part of the EPG display and the customization of
advertising delivered by the television tuner.

SUMMARY OF THE INVENTION

35 The present invention provides methods and systems to
substitute alternative video and/or audio signals and/or graphics

1 and/or text to be displayed on the viewer's television display
monitor for the video and/or audio signals that would otherwise
be displayed according to the channel to which the viewer has
5 tuned the television set. One aspect of the present invention
provides methods and systems to replace and/or modify the
advertisements that can be seen and heard by the television
viewer.

10 In one embodiment, the present invention uses an EPG as a
platform with which to execute the innovations described herein.
However, the invention is not EPG platform dependent. That is,
for some embodiments of the present invention, it is not
necessary that the viewer interact with an EPG. Furthermore, for
15 some embodiments of the present invention, it is not necessary
that the sophisticated interactive display system of an EPG be
available on the viewer's television. That is, according to one
aspect of the present invention, alteration of the selection and
display of advertisements seen and heard by the television viewer
is independent of any viewer profile information and is
20 independent of the viewer's interactivity with, or even the
existence of, an EPG.

25 According to one aspect of the present invention, an EPG
generating system is optionally programmable to block the audio
and video of the program currently being viewed when the EPG is
activated.

According to another aspect of the invention, audio and/or
video blocking is activated according to either selected channels
or selected shows being viewed when the EPG is activated.

30 According to yet another aspect of the invention, a blocking
bit located in either a channel table or show table entry is set
remotely to control blocking audio and/or video blocking of
either a selected channel or a selected show being viewed when
the EPG is activated.

1 According to still another aspect of the invention, an advertisement or message is displayed on the EPG to replace the audio and/or video being blocked.

5 According to another aspect of the invention, the viewer's television is tuned, in a manner invisible to the viewer, to a second channel for a certain period of time, and is then tuned to the first channel.

10 DESCRIPTION OF THE DRAWINGS

 These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

15 FIG. 1 is a schematic diagram of the hierarchical database utilized to generate an EPG.

 FIGS. 2A and 2B are schematic diagrams of the data structures in an EPG database for an EPG embodiment of the present invention.

20 FIG. 3 is a flow chart of one embodiment of the steps for activating audio and/or video blocking.

 FIG. 4A is a schematic diagram depicting an EPG display on a television monitor wherein the EPG display overlays a portion of the real time video display of the television signal.

25 FIG. 4B is a schematic diagram depicting an EPG display on a television monitor wherein the EPG display overlays the entire real time video display of the television signal.

 FIG. 5 is a schematic diagram depicting the Head End Channel Change aspect of the present invention.

30 FIG. 6 is a flow diagram of the Head End Channel Change process at the head end.

 FIG. 7A is a schematic diagram of a television system with a single signal receiver/tuner.

35 FIG. 7B is a flow diagram of the Head End Channel Change process at the viewer's television set.

1 FIG. 8 is a schematic diagram of a television system with two signal receivers/tuners.

5 FIG. 9 is a flow diagram of one embodiment of the Television Channel Change process with the components necessary for the EPG Viewer Profile Implementation.

10 FIG. 10 is a graphic representation of a sample screen display of an interactive Electronic Program Guide with a Program-In-Guide Window for display of the real time video signal.

DETAILED DESCRIPTION OF THE INVENTION

15 The present invention provides for the capability to alter what a television viewer watches without the viewer changing channels. One application of the present invention is to alter the advertisement that the viewer sees displayed on the viewer's television display monitor.

20 One scenario in which this application will prove useful is where a television network wants to target advertisements. Consider for example, a network, e.g., FOX, that is delivering nationwide real-time coverage of a major event, such as the SuperBowl. Historically, advertisers paid large sums of money for an advertisement to be delivered at a certain time during a commercial break in the SuperBowl coverage. The networks
25 historically delivered several advertisements, typically ranging in duration from 15 seconds to 60 seconds, back-to-back during a single commercial break. In contrast to the historical, serial advertising model used by networks, the present invention enables advertisement multi-casting. That is, the present invention will
30 provide systems and methods that will allow a network to set up multiple channels of advertising, e.g., FOX, FOX1, FOX2, etc. Each channel could provide a separate program of advertising synchronized in time to coincide with advertising delivered on the main channel, e.g., FOX. Using the present invention, the
35 television set of an individual viewer who is watching the

1 SuperBowl on FOX, will be automatically tuned, in a manner
invisible to the viewer, to one of the multiple FOX channels
during a commercial break. In one embodiment, the television set
5 automatically tunes in a serial manner to one or more of the
multiple FOX channels.

The criteria for selecting the channel to which a particular
viewer's television will be tuned may consider an individual
viewer's profile, or may be based on some other criteria, to be
10 defined by the network. Some of the possible criteria used to
make such selections are described further later in this
application.

The present invention is not limited to a particular set of
selection criteria. On the contrary, the present invention
15 discloses that such selections are definable, using such
approaches as are known in the art, as with table-driven software
programs and/or database driven criteria selection. The data
contained in the tables and/or databases that would drive the
selection criteria may be based, as has already been mentioned,
20 on the viewer's individual profile. However, the selection-
driving tables and/or databases may also contain other types of
data, such as the geographical location and corresponding time
of day when the viewer will receive the television signal.
Furthermore, the selection-driving criteria is not limited to
25 automated methods.

This application repeatedly refers to "tuning" a television
to a particular "channel." In this application, the term
"channel" includes, but is not limited to, such conventional
methods of video and audio communication as television channels,
30 cable channels, and satellite channels. Furthermore, the term
"channel" also includes other methods of video, audio and other
types of communication, including but not limited to Internet
website addresses and external data sources.

The present invention may be implemented on a personal
35 computer, a PCTV, a television connected to a set-top box, a

1 television including a microprocessor, or other such devices.
The disclosure of U.S. provisional patent application No.
60/057,089, titled "ELECTRONIC PROGRAMMING GUIDE INCLUDING AUDIO
5 AND/OR VIDEO BLOCKING FUNCTION" is incorporated by reference here
as if fully stated herein for all purposes. However, the
invention is not limited to any particular hardware configuration
or to any particular television system and will have increased
utility as new combinations of computers and television systems
10 are developed. For instance, the invention is not limited to
conventional analog television, and applies equally to digital
television and computer configurations.

A. Head End Channel Change

15 According to one aspect of the present invention, the head
end delivery provider monitors the outgoing television
programming signals. This aspect of the invention will be
referred to as "Head End Channel Change." FIG. 5 is a schematic
diagram depicting the Head End Channel Change aspect of the
present invention. FIG. 6 is a flow diagram of the Head End
20 Channel Change process at the head end. FIG. 7A is a schematic
diagram of a television system with a single signal
receiver/tuner. FIG. 7B is a flow diagram of the Head End
Channel Change process at the viewer's television set.

25 Monitoring at the head end 110 may be done electronically
or manually. According to a pre-established criteria, the head
end delivery provider inserts a channel change command in the
vertical blanking interval ("VBI") of one or more channels.
Optionally, the channel change command is accompanied by a
duration, expressed, for instance, in seconds. The pre-
30 established criteria for the VBI channel change command insertion
can be based on, for instance, a schedule of advertisements as
identified in a channel, program and advertisement scheduling
table. Alternatively, the head end delivery provider
interrogates the outgoing signal and detects a particular event,
35 such as, for instance, a change from television programming to

1 commercial advertising. The channel change command instructs the receiving television set to tune to a particular channel.

5 In one embodiment of Head End Channel Change, the head end delivery provider monitors 110 the outgoing television programming signals of a particular channel, Channel A. The channels that are to be monitored are defined to the head end by data in a table or a database 130. The head end monitor determines whether a particular channel is to be intercepted 310. 10 When the monitored channel begins delivering advertising, the head end provider checks a table or database 140 that contains information necessary to determine whether a particular advertisement should be intercepted 320 with a channel change command. The table and/or database 140 would contain, among 15 other things, the channel, time, and channel change information. This collective information is sometimes referred to below as "channel and advertising intercept database information." If the head end provider determines that the advertisement should be intercepted, then the head end provider inserts a channel change 20 instruction in the VBI 325 that instructs the receiving television to change to a second particular channel, Channel B. That is, the timing of the insertion of the channel change command in the VBI is coincident with the beginning of an advertisement. Channel B delivers alternative advertisement and/or television programming synchronized in time with Channel 25 A's delivery of advertising. Televisions are equipped with a microprocessor programmed to recognize the channel change command and to tune the television to the channel indicated in the VBI command.

30 In an alternative embodiment, the head end inserts 325 a channel change command in the VBI but does not specify the particular channel to which the television should tune. In this embodiment, the television microprocessor will determine, based on information available to the television system, including but 35 not limited to, viewer profile information, an advertising

1 database, and other types of information, to which channel the television should tune.

5 FIG. 7A is a schematic diagram of a television system with a single signal receiver/tuner. FIG. 7B is a flow diagram showing the Head End Channel Change process at the viewer's television set. The television receiver 210 receives the input television signal. The television receiver 210 includes a tuner. The television receiver sends the television signal to the VBI decoder 235 to decode the information carried in the VBI of the signal. The VBI decoder 235 sends the decoded VBI information to the microprocessor 240 for analysis.

15 Consider then, a particular viewer's television set that is tuned to Channel A. In the Head End Channel Change environment, when the viewer's television set receives a change channel command in the VBI of Channel A 600/610, the television system is programmed to execute the change channel command and instruct the television tuner to tune to Channel B 620. If the VBI channel change command is accompanied by a duration component, then the television is programmed to leave the television tuned to Channel B for the duration expressed in the VBI command (the "Channel B duration") 640. At the expiration of the Channel B duration, the television is programmed to tune the television to Channel A 650. In one embodiment of this aspect of the invention (the "Manual Intervention" embodiment), if the viewer intervenes with the Head End Channel Change sequence and instructs the television to change to a particular channel, for instance, Channel C, then the television is programmed to ignore the expiration of the Channel B duration. In such a Manual Intervention embodiment, the television will remain tuned to Channel C even after the expiration of the Channel B duration. In another embodiment, the television is programmed to ignore the viewer's manual intervention, and retunes the television to Channel A at the expiration of the Channel B duration. In an alternative embodiment, the head end continues to monitor the

1 advertisement on Channel A. When the head end determines that
the advertisement is finished on Channel A, the head end inserts
a channel change command in the VBI of Channel A to instruct the
5 viewer's television to return to Channel A. In this embodiment,
the television is monitoring Channel A, even though the viewer
is watching Channel B.

The channel change instruction will be implemented if the
viewer is watching the television in television mode. In this
10 application, television mode refers to the operation of a
television whereby the viewer is watching the television with the
television display fully occupying the television's display
monitor, and during a time when real-time television signals (as
opposed to recorded video signals) are displayed on the
15 television. Furthermore, the channel change instruction will
also be implemented if the viewer is in the EPG mode. In this
application, EPG mode refers to the operation of a television
whereby the viewer has activated the EPG and some on screen
display, formatted by the EPG, is apparent on the television
20 display monitor. As mentioned above, many modern EPGs use what
is know as a Picture-In-Guide ("PIG") Window. That is, when the
television is operating in the EPG mode, the television signal
for the channel to which the television is tuned is displayed in
a "Window," the Picture-In-Guide Window, such as a fixed position
25 area of the on screen display of the television monitor. FIG.
10 is a graphic representation of a sample screen display of an
interactive Electronic Program Guide with a Program-In-Guide
Window 12 for display of the real time video signal.
Implementing a channel change instruction when the viewer is in
30 the EPG mode in the case where the EPG provides for the
television signal to continue to be displayed in the PIG Window,
12 will cause the PIG display to reflect the changed channel in
the PIG Window 12.

Consider as an example that the SuperBowl is being telecast
35 on Channel A. Channel A interrupts the televised delivery of the

1 SuperBowl to deliver several scheduled advertisements back-to-back. The head end detects the change in the television signal to signify that an advertisement is being delivered. The head
5 end checks the information available to it, such as the channel and advertising intercept database information described above, to determine whether the advertisement should be intercepted. If so, the head end immediately inserts an instruction in the VBI of Channel A to tune to Channel B.

10 In this example, a viewer is watching the SuperBowl on the viewer's television set that is tuned to Channel A. Channel A interrupts the SuperBowl program to show a beer commercial. The viewer's television is programmed to recognize and execute the VBI change channel command. When the viewer's television
15 encounters the VBI change channel command, the viewer's television tunes to Channel B. Channel B shows a commercial for a nationally recognized brand of athletic shoes. When the commercial on Channel B is complete, the viewer's television is programmed to return to Channel A. The change of channels is invisible to the viewer.

20 Alternatively, when the television set tunes to Channel B, Channel B provides a mixture of commercial and non-commercial programming related to the SuperBowl, such as athlete interviews and team endorsed sports equipment. The viewer's television is
25 programmed to tune to Channel A at the conclusion of the mixed commercial and non-commercial programming on Channel B.

B. Television Channel Change

30 According to another aspect of the present invention, the television system is programmed to monitor the television programming signals tuned by the television. FIG. 9 is a flow diagram of one embodiment of the Television Channel Change process with the components necessary for the EPG Viewer Profile Implementation. According to a pre-established criteria, the television set instructs the television to change channels (the
35 "Television Channel Change"). Optionally, the channel change

1 command specifies an express duration in time. The pre-
established criteria to change channels can be based on, for
instance, a schedule of advertisements as identified in a
5 channel, program and advertisement scheduling table maintained
in RAM (the "advertising schedule database") 510 and 530. In an
embodiment where the advertising schedule database is maintained
in RAM, the data content of the advertising schedule database is
updated through some manner recognized in the art, for instance
10 through transmission of database updates through the VBI.
Alternatively, the advertising schedule database 510 and 530 may
be maintained at a location addressable by the television, such
as on the Internet. The advertising schedule database contains
an entry for each advertisement that is to be intercepted. Each
15 entry specifies, among other things, the channel which is
scheduled to carry the advertisement to be intercepted (Channel
A), the start time of the advertisement to be intercepted, the
channel (Channel B) to which the television should be tuned, and,
optionally, the duration of time for which the television should
20 remain tuned to Channel B.

Alternatively, the pre-established criteria to change
channels can be based on certain changes detected in the tuned
television signal. For instance, the television interrogates the
tuned signal and detects a particular event, such as, for
instance, a change from television programming to commercial
25 advertising. This process is similar to the process flow diagram
in FIG. 7B. When the television detects such a pre-defined
event, the television instructs the tuner to change channels to
a particular channel. In one embodiment of the Television
Channel Change, the television builds the instruction to change
30 channels from information located in the advertising schedule
database described above. In another embodiment of the
Television Channel Change, the television builds the instruction
to change channels from information located in the relevant
Channel Data Table entry and/or Show List entry as are described
35

1 in detail later in this application and from the corresponding entry in the advertising database also described in detail later in this application.

5 As was previously mentioned, a channel change instruction will be implemented if the viewer is watching the television in television mode. Furthermore, a channel change instruction will also be implemented if the viewer is in the EPG mode, causing the FIG display 12 to reflect the changed channel in the FIG Window 12.

10 In an alternative embodiment, the television is equipped with two tuners. FIG. 8 is a schematic diagram of a television system with two signal receivers/tuners. In this embodiment, rather than maintain a duration time for each commercial to be intercepted, the television uses one tuner to tune to the Channel B; the television uses the second tuner 280 to monitor, as was previously described above in this application in connection with Head End Channel Change, the Channel A to determine when the advertisement is finished. When the second tuner 280 detects that the advertisement is finished, the second tuner 280 instructs the television to display Channel A on screen. This can be implemented in one of two ways. One way is to instruct the television to use the first tuner to tune to Channel A. The second way is to switch the control of the on screen display from the first tuner, which is tuned to Channel B, to the second tuner which is already tuned to Channel A.

25 C. EPG Implementation

30 According to another aspect of the invention, changes to the television signal that the viewer watches are only implemented if the viewer activates the EPG. This aspect of the invention is referred to as the "EPG Implementation."

35 In the EPG Implementation, a Data Base Engine ("DBE") builds a database in RAM. FIG. 1 depicts a hierarchical structure of such a database. In one embodiment, the database is structured internally as schedule data structures and theme data structures

1 linked by handles and handle tables. Each handle is an index to
a handle table which contains pointers to blocks of memory where
structures of the database are stored.

5 In one embodiment, the hierarchy of the schedule data
structures, in descending order, is:

Channel Data Table: contains subscriber unit's list of
channels;

10 Show List: contains time slots for each show
scheduled to be broadcast for a
channel;

Show Title: contains the title text and show title
attributes;

15 Show Description: contains the show's ratings,
attributes, and description text.

20 A channel data table, as depicted in FIG. 2A, is the highest
level data structure in the depicted hierarchy. This table
includes an entry for each channel received by the viewer's
television. The entries in the channel data table are changed
infrequently and are determined by the location of the subscriber
unit and type of services received. Each channel data table
entry includes information concerning the channel and a handle
to a show list handle table for the channel. Additionally, in
the EPG Implementation, the channel data table includes an audio
25 blocking bit ("ABB"), and a video blocking bit ("VBB") which are
set by commands received by the DBE.

30 The next data structure in the hierarchy, as depicted in
FIG. 2B, is the show list. The show list includes a start time
typically being midnight GMT and 24 hours of scheduling. The
channel's schedule is given by an ordered sequence of show slots,
with a show slot for each show to be broadcast by a particular
channel for a particular day. Each slot includes a duration,
show title handle, and show description handle. Finding an entry
corresponding to a given start time requires the entries to be
35 scanned, in order, from the beginning of the show list and adding

1 duration values. In the EPG Implementation, the show slots include an ABB and a VBB.

5 In one embodiment of the EPG Implementation, the ABB and VBB in both the Channel Table Entries and the Show List Entries are accompanied by additional information, including pointers to entries in the advertising database described below.

10 In addition to the above-described program scheduling data, one embodiment of the EPG Implementation provides for the creation and maintenance of an advertising database at the local television system. The advertising database will contain advertisements comprising video, audio, graphics and/or text components. The advertising database may also contain instructions to tune to a particular channel. The channel-tuning instructions will be used by the system to tune the television to channels which provide advertising.

15 In one embodiment of the EPG Implementation, the present invention uses the audio blocking bit ("ABB") and video blocking bit ("VBB") in the channel ID entries in the channel data table and the show list entries in the show list data structures described above and depicted in FIGS. 2A and 2B to determine whether to block the video and/or audio signals currently tuned by the viewer's television set. FIG. 3 is a flow chart of one embodiment of the steps for activating audio and/or video blocking. The values saved in the ABB and VBB data fields will have been previously set for each channel and each show. FIG. 4A is a schematic diagram depicting an EPG display on a television monitor wherein the EPG display overlays only a portion of the real time video display of the television signal. FIG. 4B is a schematic diagram depicting an EPG display 405 on a television monitor 400 wherein the EPG display overlays (blocks) the entire real time video display of the television signal.

30 When the user activates the EPG, the EPG checks the VBB of the channel table entry of the channel currently tuned prior to

1 the viewer entering the EPG. In one embodiment of the EPG
Implementation, if the VBB in the channel table entry of the
currently tuned channel is set "on," then the EPG display is
5 adjusted to completely cover the screen. That is, the show being
viewed is completely blocked out.

Similarly, the ABB for the currently tuned channel is
checked. If the ABB in the channel table entry of the currently
tuned channel is set "on," then the EPG blocks the audio portion
10 of the currently tuned channel when the viewer enters the EPG.
That is, if the signal provided to the television system is
modulated onto channel 3/4 output, then the audio signal is not
modulated onto the output signal.

If either audio and visual blocking is activated, then the
above-described advertising database is accessed. In one
embodiment of the EPG Implementation, the system accesses the
advertising database according to a preprogrammed set of
instructions that would be dependent upon criteria, including,
but not limited to: the time of day; the day of the week; the
20 type of program that the viewer was watching immediately before
activating the EPG; and/or, the channel to which the viewer was
tuned immediately before activating the EPG. The preprogrammed
set of instructions determines the appropriate advertisement to
display in the appropriate window and/or windows of the EPG
display. The preprogrammed set of instructions could further
25 utilize viewer profile characteristics to determine the
appropriate advertisement to display on the viewer's television
monitor.

In another embodiment of the EPG Implementation, the ABB and
VBB in both the Channel Table Entries and the Show List Entries
30 are accompanied by additional pointers to entries in the
advertising database 535 described above. In this embodiment,
if either the ABB or VBB are set "on," then the system accesses
the advertising database as instructed by the pointers associated
35 with the ABB and/or VBB. The system then uses the advertising

1 data, whether video, audio, graphics, text, or a command to tune
to another channel, to present alternative advertising to the
viewer, either in the PIG display window, or in some other window
5 or display device of the EPG. Alternatively, the alternative
advertising data is accessed by a link to the Internet.
Alternatively, the alternative advertising data, including video,
audio, graphics, and/or text, is delivered by the EPG provider
from the head end, e.g., through the VBI.

10 **D. EPG Viewer Profile Implementation**

According to still another aspect of the invention, changes
to the television signal that the viewer watches are only
implemented if the television provides an EPG and if the EPG is
programmed to customize advertising based on the collection of
15 data known as the Viewer Profile. This aspect of the invention
is referred to as the "EPG Viewer Profile Implementation." U.S.
Patent Application No. 09/120488, Attorney Docket No.
32714/LTR/E190, the disclosure of which is incorporated by
reference herein for all purposes, discloses the collection of
20 Viewer Profile data. The EPG Viewer Profile Implementation is
not necessarily dependent upon the viewer actually activating the
EPG.

In one embodiment of the EPG Viewer Profile Implementation,
the television system uses Viewer Profile information 520 to
25 customize the presentation and/or scheduling of telecast
advertisements that are viewable during the real time telecast
of the television program that the viewer is watching. One
example is customizing an overlay message to an advertisement on
a local geographic basis. For instance, the geographic location
30 of the individual viewer is known to the television system. The
broadcaster or head end can packet match on the zip code to
customize the message so each zip code gets a different message,
i.e., the 3 Burger Kings in the viewer's local area. In one
embodiment, the customized messages can be preloaded by zip code
35 into the memories of particular viewers' television system, as

1 through an EPG. The preloaded messages can be transmitted by a
head end during off hours and stored in the viewer's terminal for
use when the advertisement runs, e.g., during a television
5 program or in a video clip in the Ad Window 14 and/or 16. The
electronic trigger to run the message can be transmitted along
with the television signal in real time and can identify the
messages stored in the user terminal that need to be applied.

10 In another embodiment of the EPG Viewer Profile
Implementation, the customized messages are narrowcast, according
to viewer profile information maintained at the head end, with
the televised advertisement. One way to narrowcast the
customized messages is to embed the customized information in the
advertisement video stream. Another way is to transmit a digital
15 "watermark" in the video stream of the advertisement.

20 In one embodiment of the EPG Viewer Profile Implementation,
customization of real-time viewing of advertisements is achieved
by providing multiple channels of advertising, by tuning the
television automatically to a particular advertising channel at
the time during the telecast of the television program during
which an advertisement is scheduled to occur, and by then tuning
the television back to the viewer's chosen television program at
the conclusion of the advertisement. In the EPG Viewer Profile
Implementation, the EPG determines, based on the Viewer Profile
25 520, to which of multiple alternative advertising channels the
television should be instructed to tune.

30 In another embodiment, a service monitors telecasts for
advertisements as they are telecast on a particular channel and,
based on the viewer profile information maintained at the head
end 160, inserts a change channel command in the Vertical
Blanking Interval (the "VBI") when an ad is telecast, said change
channel command causing the television to tune to a particular
channel. Alternatively, the head end inserts the change channel
command, and the EPG at the viewer's television determines to
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1 which of multiple possible alternative advertising channels the television should be tuned according to the Viewer's Profile 520.

5 In this application, the term Viewer Profile includes all aspects of the viewer that can be collected by the EPG, and includes, but is not limited to, the information described as viewer profile data, viewer profile characteristics, viewer profile information, and/or viewer profile in U.S. Patent Application No. 09/120488, Attorney Docket No. 32714/LTR/E190, and includes as well, the "access-content" information model, the
10 "adjacent-content" information model, and the "history of use" information model described therein.

The EPG can select advertisements from various possible locations, including but not limited to: a library of
15 advertisements 535 stored at the viewer's terminal in RAM, that have been downloaded through the VBI, stored at the head-end, or accessible through an EPG link to the Internet/World Wide Web. The advertisements 535 may be in the form of graphics, text, video clips, audio clips, and combinations thereof. Each
20 advertisement can be assigned theme codes, profile codes, and other selection intelligence. In one embodiment, in order to customize the advertising display, the EPG searches the library of available advertisements to locate advertisements that match criteria set by the advertisers for "access content," "adjacent
25 content," "history of use," and/or Viewer Profile information. In another embodiment, the EPG selects advertisements for display according to pre-established selection criteria.

Illustrative Embodiments

30 The embodiments of the invention described herein are only considered to be preferred and/or illustrative of the inventive concept; the scope of the invention is not to be restricted to such embodiments. Various and numerous other arrangements may be devised by one skilled in the art without departing from the spirit and scope of this invention. For example, the invention

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applies equally to digital television as it does to conventional
analog television.

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